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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DANIEL J. VANEPPS, JR. and WILLIAM CHRIS EATON

Appeal 2009-1199
Application 10/723,776[1]
Technology Center 2600

Decided:[2] May 18, 2009

Before JOSEPH F. RUGGIERO, MARC S. HOFF,
and BRADLEY W. BAUMEISTER, *Administrative Patent Judges*.

HOFF, *Administrative Patent Judge*.

DECISION ON APPEAL

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[1] The real party in interest is Sony Ericsson Mobile Communications AB.
[2] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from a Final Rejection of claims 1, 4, 7-12, 14-15, 17, 20, 23-25, 28, 30-32, 35, 37, and 38.[3] We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part, and enter a new ground of rejection.

Appellants' invention relates to an electronic device that receives a noise signal and generates a sound metric for the noise signal. The sound metric generates an alert signal, wherein the alert signal may be generated so as to have a spectral composition that is based on the sound metric, wherein the sound metric is a loudness profile (Spec. 5).

Claim 1 is exemplary:

1. A method of operating an electronic device, comprising:
receiving a noise signal;
generating a sound metric for the noise signal by performing a Fourier transform on the noise signal to obtain a frequency domain representation of the noise signal, wherein the sound metric is a loudness profile; and
generating an alert signal having a spectral composition based on the sound metric.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Corkum	US 6,134,455	Oct. 17, 2000
Cuddy	US 6,246,761 B1	Jun. 12, 2001
Boillot	US 2005/0278165 A1	Dec. 15, 2005

[3]Claims 5, 6, 13, 16, 21, 22, 29, and 36 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 2, 3, 18, 19, 26, 27, 33, and 34 have been canceled.

Claims 1, 7, 8, 10, 14, 15, 17, 23 - 25, 31, 32, and 38 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Cuddy.

Claims 4, 20, 28, and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cuddy in view of Boillot.

Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Cuddy.

Claims 11, 12, 30, and 37 stand rejected under 35 U.S.C. 5 103(a) as being unpatentable over Cuddy in view of Corkum.

Rather than repeat the arguments of Appellants or the Examiner, we make reference to the Appeal Brief (filed August 13, 2007) and the Examiner's Answer (mailed October 1, 2007) for their respective details.

ISSUES

Regarding representative claim 1, the Examiner finds that Cuddy teaches a method of operating an electronic device comprising receiving a noise signal, generating a sound metric for the noise signal by performing a Fourier transform on the noise signal to obtain a frequency domain representation of the noise signal, wherein the sound metric is a loudness profile, and generating an alert signal having a spectral composition based on the sound metric (Ans. 8).

Appellants argue that Cuddy does not teach that the sound metric is a loudness profile (App. Br. 8-9), providing alert profiles of different spectral composition (App. Br. 10), nor user selection of the alert profiles (App. Br. 11-12).

Therefore, there are three principal issues in the appeal before us:

1. Did Appellants show that the Examiner erred in finding that Cuddy teaches a method of operating an electronic device including the step of generating a sound metric for a noise signal, wherein the sound metric is a loudness profile?

2. Did Appellants show that the Examiner erred in finding that Cuddy teaches an electronic device wherein at least one of the plurality of alert profiles has a different spectral composition than other ones of the plurality of alert profiles?

3. Did Appellants show that the Examiner erred in finding that Cuddy in combination with Corkum teaches a method of operating an electronic device that includes receiving a user selection of one of the plurality of alert profiles?

FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

The Invention

1. According to Appellants, the invention concerns a method of operating an electronic device comprising receiving a noise signal, generating a sound metric for the noise signal by performing a Fourier transform on the noise signal to obtain a frequency domain representation of the noise signal, wherein the sound metric is a loudness profile, and generating an alert signal having a spectral composition based on the sound metric (Fig. 3 and 4; Spec. 5 and 8-10).

2. The sound metric processor may calculate the distribution of sones/bark versus bark using the IS0 532B loudness calculation method. Calculation of the IS0 532B loudness is described and incorporated by reference in the Deutsches Institut fur Normung E.V. (DIN) 45631 Standard entitled "Procedure for Calculating Loudness Level and Loudness." FIG. 5 illustrates an exemplary distribution of sones/bark versus bark for an ambient noise signal. The sound metric processor may determine an overall loudness and the loudness in one or more critical bands for the ambient noise signal (Spec. 9).

3. The loudness profile is defined as an overall loudness measure for the noise signal along with a loudness measure of the noise signal in one or more critical bands, wherein the critical bands are sounds that compete for the same nerve endings on the basilar membrane of the inner ear (Spec. 5).

Cuddy

4. Cuddy teaches a method of operating an electronic device, comprising receiving an ambient noise signal from the microphone 14 of the hand-held electronic device (col. 4, ll. 66-67).

5. Cuddy teaches analyzing the characteristics of the ambient noise signal, including analog and digital techniques to determine its amplitude and frequency characteristics generating a sound metric for the noise signal by performing a Fourier transform on the noise signal to obtain a frequency domain representation of the noise signal (col. 5, ll. 40-46; col. 7, ll. 10-13 and 30-35).

6. Cuddy teaches generating an initial set of audible characteristics necessary for ringing tones to be heard by the user over the ambient noise signal and generating an alert signal having a spectral composition based on

the sound metric that may be selected from a look-up table in the DSP's 24 memory; wherein each profile has records relating to different possible ranges of amplitude and frequency characteristics that may be heard *over* the ambient noise (col. 2, ll. 38-47; col. 5, ll. 10-17 and 46-57; col. 6, ll. 1-4).

7. Cuddy teaches a plurality of known methods for setting the ring tones manually (col. 1, ll. 29-42).

Boillot

8. Boillot teaches a method for increasing the audio perceptual loudness in a hand-held wireless communication device by calculating the spread of excitation across critical bands from the masking of pure tones by narrowband noise using the ISO-532B loudness calculation method (Abstract, paras. [0002] and [0050]).

9. Boillot teaches determining an overall loudness profile for the noise signal and determining a loudness in at least one critical band for the noise signal based on the distribution of sones/bark versus bark, wherein sone defines a subjective measure of loudness where a sone value of 1 corresponds to the loudness of a 1 KHz tone at an intensity of 40 dB SPL and 1 bark interval corresponds to a given critical band integration (Fig. 4; paras. [0032], [0038-0039], and [0050]).

10. 'Loudness' is a term of art in the psychoacoustic and audiometric data industry, used to describe the human perception of intensity, as a function of the sound intensity, frequency, and quality (para. [0029]).

Corkum

11. Corkum teaches receiving a user selection by an input actuator 84 having one or more actuation keys actuable by a user for automatic ringer volume function (col. 6, ll. 48-58).

PRINCIPLES OF LAW

Anticipation pursuant to 35 U.S.C § 102 is established when a single prior art reference discloses expressly or under the principles of inherency each and every limitation of the claimed invention. *Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 1347 (Fed. Cir. 1999); *In re Paulsen*, 30 F.3d 1475, 1478-79 (Fed. Cir. 1994).

Analysis of whether a claim is patentable over the prior art under 35 U.S.C. § 102 begins with a determination of the scope of the claim. We determine the scope of the claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). This means that the words of the claim must be given their plain meaning unless the plain meaning is inconsistent with the specification. *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989) Ordinary, simple English words whose meaning is clear and unquestionable, absent any indication that their use in a particular context changes their meaning, are construed to mean exactly what they say. The properly interpreted claim must then be compared with the prior art.

In an appeal from a rejection for anticipation, the Appellants must explain which limitations are not found in the reference. *See Gechter v. Davidson*, 116 F.3d 1454, 1460 (Fed. Cir. 1997) ("[W]e expect that the

Board's anticipation analysis be conducted on a limitation by limitation basis, with specific fact findings for each *contested* limitation and satisfactory explanations for such findings.")(emphasis added). *See also In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.") (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

> Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'

KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 405 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 550 U.S. at 407 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.")

In *KSR*, the Supreme Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art," *id.* at 415, and discussed circumstances in which a patent might be determined to be obvious. In particular, the Supreme Court emphasized that "the principles laid down in *Graham* reaffirmed the 'functional approach' of

Hotchkiss, 11 How. 248." *KSR,* 550 U.S. at 415 (citing *Graham*, 383 U.S. at 12), and reaffirmed principles based on its precedent that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* The Court explained:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at 417. The operative question in this "functional approach" is thus "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id.*

ANALYSIS

Claim 1, 7, 8, 10, 17, 23-25, and 32

Appellants argue that the Examiner erred in finding that Cuddy teaches a method of operating an electronic device comprising the step of generating a sound metric, "wherein the sound metric is a loudness profile," as required by independent claims 1, 17, 25 and 32 (App. Br. 8-9).

The Examiner finds that Cuddy teaches a method of operating an electronic device comprising receiving a noise signal (FF 4), generating a sound metric for the noise signal by performing a Fourier transform on the noise signal to obtain a frequency domain representation of the noise signal,

and generating an alert signal having a spectral composition based on the sound metric (FF 6, Ans. 3).

With respect to the sound metric being a loudness profile, the Examiner finds that Cuddy teaches that the method of operating an electronic device includes generating an initial set of audible characteristics necessary for ringing tones to be heard by the user *over* the ambient noise, wherein the generated alert ringing tones are *louder* than the ambient noise (FF 6, Ans. 8). The Examiner finds that 'loudness' is inextricably linked to relativity (Ans. 8). In generic terms, the Examiner finds that for a sound to be considered 'louder' than another infers that one sound is heard *over* the other (Ans. 8).

Appellants argue that the definition of 'loudness' included in the Specification is not the same as sound intensity or power level, as would be inferred by its plain meaning (App. Br. 8). According to Appellants, loudness describes the strength of the human ear's perception of a sound (App. Br. 8).

We are persuaded by Appellants' argument. Appellants' Specification defines 'loudness profile' as an overall loudness measure for the noise signal along with a loudness measure of the noise signal in one or more critical bands, wherein the critical bands are sounds that compete for the same nerve endings on the basilar membrane of the inner ear (FF 3). Appellants make reference to loudness as a term of art, wherein the sound metric processor may calculate the distribution of sone/bark versus bark using the ISO 532B loudness calculation method (App. Br. 8, FF 2). Boillot provides further evidence that 'loudness' has become a term of art used in the psychoacoustic and audiometric data industry to describe the human

perception of intensity, as a function of the sound intensity, frequency, and quality (FF 9).

Appellants have pointed to a special definition of "loudness profile" in the Specification, and have shown that the Examiner's interpretation of this claim limitation is inconsistent with the Specification. Under the proper interpretation of "loudness profile," we agree with Appellants' position that Cuddy does not disclose that the "sound metric is a loudness profile" as independent claims 1, 17, 25, and 32 require. Accordingly, we find that the Examiner has not shown that Cuddy teaches all of the limitations of claims 1, 7, 8, 10, 17, 23-25, and 32.

Therefore, because the Appellants have established error in the Examiner's rejection, we reverse the Examiner's rejection of claims 1, 7, 8, 10, 17, 23-25, and 32 under 35 U.S.C. § 102.

Claims 14, 15, 31, and 38

Appellants' arguments directed to this group of claims present us with the second issue. Appellants argue that the Examiner erred in finding that Cuddy teaches at least one of the plurality of alert profiles having a *different spectral composition* than other ones of the plurality of alert profiles as claim 14 requires (App. Br. 10). Appellants argue that Cuddy does not explicitly teach whether the table entries regarding changes to the ringing tones include entries that have different spectral composition, i.e. different frequency changes (App. Br. 10).

We are not persuaded by Appellants' arguments. We concur in the Examiner's finding that Cuddy teaches a method of operating an electronic device comprising providing a plurality of alert profiles, at least one of the plurality of alert profiles having a different spectral composition than other

ones of the plurality of alert profiles (FF 6). Specifically, Cuddy teaches consulting a lookup table in the DSP chip's memory incorporating records relating to different possible ranges of amplitude and frequency characteristics, in order to locate a record incorporating information relating to the necessary change of audible characteristics of the ringing tones to be heard over the ambient noise (FF 6).

Because we agree with the Examiner's position, we find no error the Examiner's rejection of claims 14, 15, 31, and 38 under 35 U.S.C. § 102.

Claims 4, 20, 28 and 35

As noted *supra*, we reversed the rejection of parent claim 1 from which claims 4, 20, 28, and 35 depend. Appellants present no separate argument for the patentability of dependent claims 4, 20, 28, and 35. We have reviewed Boillot (the additional reference applied by the Examiner to reject these claims), and find that Boillot teaches the limitations deemed to be absent from Cuddy.

Specifically, Boillot teaches calculating a distribution of sones/bark versus bark for the frequency domain representation of the noise signal using an IS0 532B loudness calculation method (FF 8, Ans. 6). In addition, Boillot teaches determining an overall loudness for the noise signal and a loudness in at least one critical band for the noise signal based on the distribution of sones/bark versus bark, the loudness profile comprising the overall loudness of the noise signal and the loudness in at least one critical band (FF 9; Figure 4). We therefore concur in the Examiner's conclusion that it would have been obvious to one of ordinary skill in the art to incorporate an ISO 532B loudness calculation method and device to determine an overall loudness for a noise signal as taught by Boillot in order

to accurately calculate the spread of signal excitation to better analyze the loudness and frequency characteristics of a noise signal (Ans. 6).

We therefore affirm the Examiner's rejection of claims 4, 20, 28, and 35 under 35 U.S.C. § 103.

Claim 9

As noted *supra*, we reversed the rejection of claim 1 from which claim 9 depends. We will therefore reverse the Examiner's rejection of claim 9 under 35 U.S.C. § 103 as being unpatentable over Cuddy, for the same reasons expressed with respect to the § 102 rejection of parent claim 1 as anticipated by Cuddy, *supra*.

Claims 11, 12, 30, and 37

Commensurate with the third issue, Appellants argue that the Examiner erred in finding that Cuddy in combination with Corkum teaches a method of operating an electronic device that includes receiving *a user selection* of one of the plurality of alert profiles (App. Br. 11). Specifically, Appellants argue that Cuddy does not disclose or suggest that such a table of alert entries may be available for user selection (App. Br. 11).

The Examiner finds that the Corkum reference teaches the limitations deemed to be absent from Cuddy (Ans. 7). Specifically, Corkum teaches receiving a user selection for a particular alert profile (FF 11). The Examiner finds, and we agree, that the combination of Corkum and Cuddy fairly suggests that when a user wishes to override the alert signal generation means as a way to select an alert profile, the user may select either an alert signal from the automatic generating means, or one of the manually selected alert signals outlined in the background of Cuddy (FF 7; Ans. 7).

Because Appellants have not shown error in the Examiner's position, we will affirm the Examiner's rejection of claims 11, 12, 30, and 37 under 35 U.S.C. § 103.

New Grounds of Rejection of claims 1, 17, 25, and 32

We make the following new grounds of rejection using our authority under 37 C.F.R. § 41.50(b).

Claim 1, 17, 25, and 32 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Cuddy in view of Boillot.

As noted *supra*, we find that Cuddy teaches, an electronic device, a computer readable storage medium, and a method of operating an electronic device comprising receiving a noise signal (FF 4), generating a sound metric for the noise signal by performing a Fourier transform on the noise signal to obtain a frequency domain representation of the noise signal (FF 5) and generating an alert signal having a spectral composition based on the sound metric (FF 6). Cuddy, however, fails to teach generating a sound metric that is a loudness profile.

Boillot teaches calculating a distribution of sones/bark versus bark for the frequency domain representation of the noise signal using an ISO 532B loudness calculation method (FF 8) and determining an overall loudness for the noise signal and a loudness in at least one critical band for the noise signal based on the distribution of sones/bark versus bark, the loudness profile comprising the overall loudness of the noise signal, and the loudness in at least one critical band (FF 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the automatic volume control for a telephone ringer in an electronic device of Cuddy to incorporate an ISO 5328 loudness calculation method and device to determine an overall loudness for a noise signal, as taught by Boillot. One would have been motivated to do so in order to accurately calculate the spread of signal excitation to better analyze the loudness and frequency characteristics of a noise signal (Ans. 6).

Although we decline to reject every claim under our discretionary authority under 37 C.F.R. 41.50(b), we emphasize that our decision does not mean the remaining claims are patentable. Rather, we merely leave the patentability determination of the remaining claims to the Examiner. *See* MPEP § 1213.02.

CONCLUSIONS OF LAW

Appellants have shown that the Examiner erred in finding that Cuddy teaches a method of operating an electronic device including the step of generating a sound metric for the noise signal, wherein the sound metric is a loudness profile.

Appellants have not shown that the Examiner erred in finding that Cuddy teaches at least one of the plurality of alert profiles having a different spectral composition than other ones of the plurality of alert profile.

Appellants have not shown that the Examiner erred in finding that Cuddy in combination with Corkum teaches a method of operating an electronic device that includes receiving a user selection of one of the plurality of alert profiles.

ORDER

The Examiner's rejection of claims 4, 11, 12, 14, 15, 20, 28, 30, 31, 35, 37, and 38 is affirmed. The Examiner's rejection of claims 1, 7, 8, 9, 10, 17, 23-25, and 32 is reversed.

We have also entered a new ground of rejection against claims 1, 17, 25, and 32 under 37 C.F.R. § 41.50(b).

37 C.F.R. § 41.50(b) provides that, "[a] new grounds of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 C.F.R. § 41.50(b) also provides that the Appellants, *WITHIN TWO MONTHS FROM THE DATE OF THE DECISION*, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of proceedings (37 C.F.R. § 1.197 (b) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner ...

(2) Request that the proceeding be reheard under 37 C.F.R. § 41.52 by the Board upon the same record ...

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.1.36(a).

AFFIRMED-IN-PART

37 C.F.R. § 41.50(b)

ELD

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